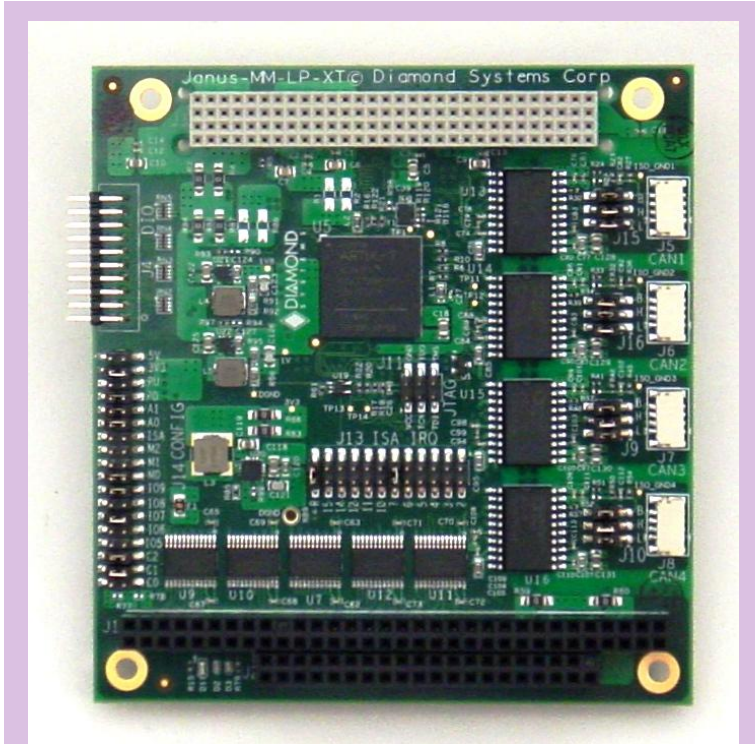# JANUS-MM-4LP-XT

PC/104-*Plus* Quad or Dual Isolated CAN Module with 16 DIO

- ◆ 2 or 4 CAN 2.0B ports
- ◆ Data rates up to 1Mbps
- ◆ Supports standard (11-bit identifier) and extended (29-bit identifier) frames
- ◆ Expanded TX and RX message queues for enhanced performance
- ◆ 16 8-byte transmit message queues
- ◆ 31 8-byte receive message queues
- ◆ 16 receive filters
- ◆ Galvanically isolated transceivers
- ◆ 500V port-to-host and port-to-port isolation
- ◆ Jumper selectable biased split termination for improved noise reduction
- ◆ 16 digital I/O lines
- ◆ Latching connectors for increased ruggedness
- ◆ PCI and ISA bus interfaces
- ◆ Basic CAN driver included with APIs and monitor program
- ◆ Supports Linux Ubuntu 12.04LTS and Windows Embedded 7
- ◆ Extremely rugged -40°C to +85°C operating temperature
- ◆ MIL-STD-202G shock and vibration compatible
- ◆ PC/104-*Plus* form factor:
    3.55" x 3.775" (90mm x 96mm)
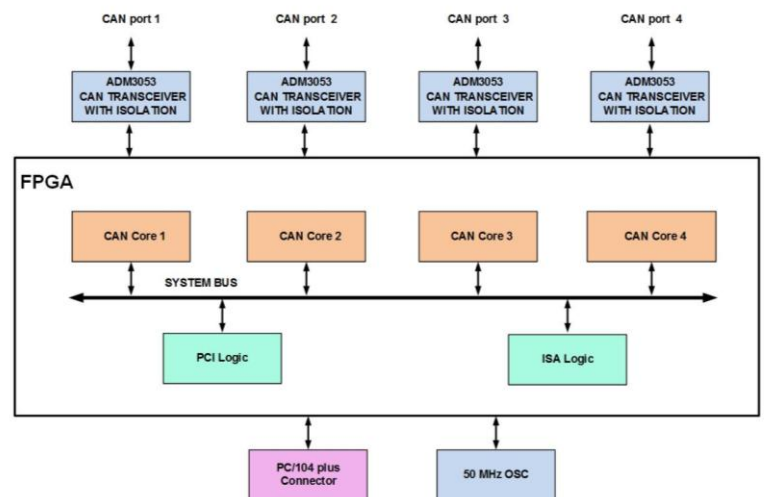
High Performance CAN Functionality

The Janus-MM-4LP-XT family of I/O modules offers two or four opto-isolated CANbus 2.0B ports plus 16 digital I/O lines. Models are available in both the PC/104-*Plus* and PC/104 form factors.   An FGPA core houses the CAN controller logic and digital I/O logic providing data rates up to 1Mbps. Each CAN port supports standard and extended frames as well as expanded TX and RX message queues for enhanced performance. Each port has its own combination isolator and transceiver chip. The Janus-MM-4LP-XT fits a wide variety of rugged and on-vehicle embedded serial I/O application needs.

Digital I/O

Janus-MM-4LP-XT offers 16 programmable digital I/O lines organized as two 8-bit digital I/O ports.

Rugged Design

Janus-MM-4LP-XT was designed with harsh applications in mind including latching connectors to further improve reliability. Extended temperature operation of -40°C to +85°C is tested and guaranteed. The module is compatible with MIL-STD-202G shock and vibration specifications.

Janus-MM-4LP Block Diagram

Janus-MM-4LP: 2 or 4 CANbus 2.0 Ports with DIO

DIAMOND S Y S T E M S

Specifications

Number of CAN ports	2 or 4 CANbus 2.0B, model dependent
Data rates	Up to 1Mbps
Controller	FPGA based
Transceiver	ADM3053 isolation + transceiver
Isolation	500V port-to-port and port-to-host
Frames	Standard 11-bit identifier Extended 29-bit identifier
Message queues	Expanded TX and RX message queues 16 8-byte transmit message queues 31 8-byte receive message queues
Receive filters	16
Termination	Jumper selectable biased split termination
Digital I/O	16 programmable digital I/O lines arranged in 2 8-bit ports
Logic levels	3.3V or 5V, jumper selectable
Pull-up/pull-down	Jumper selectable
Direction control	Software programmable
Host interface	PCI or ISA, self selecting
Connectors	Latching connectors for increased ruggedness
Input power	+5VDC +/-5%
Power consumption	W at 5VDC
OS support	Windows Embedded 7 Linux Ubuntu 12.04LTS
Operating temp	-40°C to +85°C (-40°F to +185°F)
Operating humidity	5% to 95% non-condensing
Shock	MIL-STD-202G compatible
Vibration	MIL-STD-202G compatible
MTBF	tbd hours at 20°C
Form factor	PC/104-*Plus* 3.55" x 3.775" (90mm x 96mm)
Weight	2.5oz (71g)
RoHS	Compliant

Key Features

All CAN ports on the Janus-MM-4LP-XT are driven from an FPGA-based CAN 2.0 bus controller core which provides full CAN2.0B functionality. Each port has an Analog Devices combination isolation and transceiver chip, independently isolating it from the host system and other ports to eliminate sensitivity to noise and ground shifts in the network.

The product has several jumper configurable options including CAN biased split termination for improved noise reduction. The digital I/O logic level and pull-up / pull-down resistors are also jumper configurable.

For additional ruggedization, zero ohm jumper-bypass resistors can be installed in any configuration.

Ordering Information

JNMM-4LP-XT	Quad isolated CAN port PC/104-*Plus* Module with 16 Digital I/O
JNMM-2LP-XT	Dual isolated CAN port PC/104-*Plus* Module with 16 Digital I/O
JNMM-4L-XT	Quad isolated CAN port PC/104 Module with 16 Digital I/O
JNMM-2L-XT	Dual isolated CAN port PC/104 Module with 16 Digital I/O
6981182	CANbus 2.0 cable
6981164	Digital I/O cable

Software Support

Janus-MM-4LP-XT comes with a basic CAN driver for both Windows Embedded 7 and Linux Ubuntu 12.04 LTS operating systems. Both drivers support dual-independent and dual-redundant modes.

Windows Embedded 7 and Linux APIs and monitor programs are also included. The monitor program allows users to set, manage and observe all of the functions and traffic on the CAN ports and digital I/O lines.

Windows 7 Monitor Program